



ANDREA BEATTY RINKER
Director

WA-08-1110

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

727 Columbia Lane, SU-11 • Olympia, Washington 98504-6011 • (206) 753-2353

TO: Gail Colburn, NWRO

FROM: Bill Yake *BY*

SUBJECT: Sampling Results from Unnamed Creek South of Queen City Farms (7/21/87)

DATE: February 5, 1988

Abstract: An unnamed, intermittent stream south of Queen City Farms was sampled at one location for a wide range of constituents (conventions, major ions, metals, organic priority pollutants, Daphnia bio-assay). Traces of two volatile organics were detected. Results for other parameters were unremarkable.

Based on visual reconnaissance of the area, Gail Colburn and Ron Devitt (NWRO) hypothesized that there were possible groundwater/surface water linkages between Cedar Hills Landfill; Queen City Farms Lake and associated waste ponds; a series of pits, springs, and small streams at Stoneway Concrete's sand and gravel operation; and the unnamed stream which crosses Cedar Grove Road in the vicinity of 17115 Cedar Grove Road (see Figure 1). Although the major disposal ponds (1, 2, and 3) at Queen City Farms have been remediated, the potential for contamination from other sources (ponds 4, 5, and 6, and Cedar Hills Landfill) remained.

The Northwest Regional Office (NWRO) of the Department of Ecology requested the Water Quality Investigations Section's (WQIS) help in assessing the status of an unnamed creek immediately south of Queen City Farms (Brugger, 1987).

The primary objective in sampling the unnamed creek was to determine if, under low-flow conditions, the creek was measurably contaminated. A secondary purpose was to provide information on a wide array of water quality parameters that could be used in conjunction with subsequent data to better understand the ground water/surface water linkages upgradient from the creek. At the time of the stream sampling study, little general characterization of groundwater/spring/surface water had been performed in the study area, although analyses for selected metals and organics in groundwater and surface water had been conducted for Queen City Farms, Inc. (Hart Crowser & Associates, 1983).

A field inspection/visual reconnaissance of the site was conducted on June 18, 1987, by Gail Colburn - NWRO, Phyllis Baas and Michael Ruef - Hazardous Waste Cleanup Program, and Bill Yake - WQIS. The findings of this site visit are summarized by Ruef (1987).

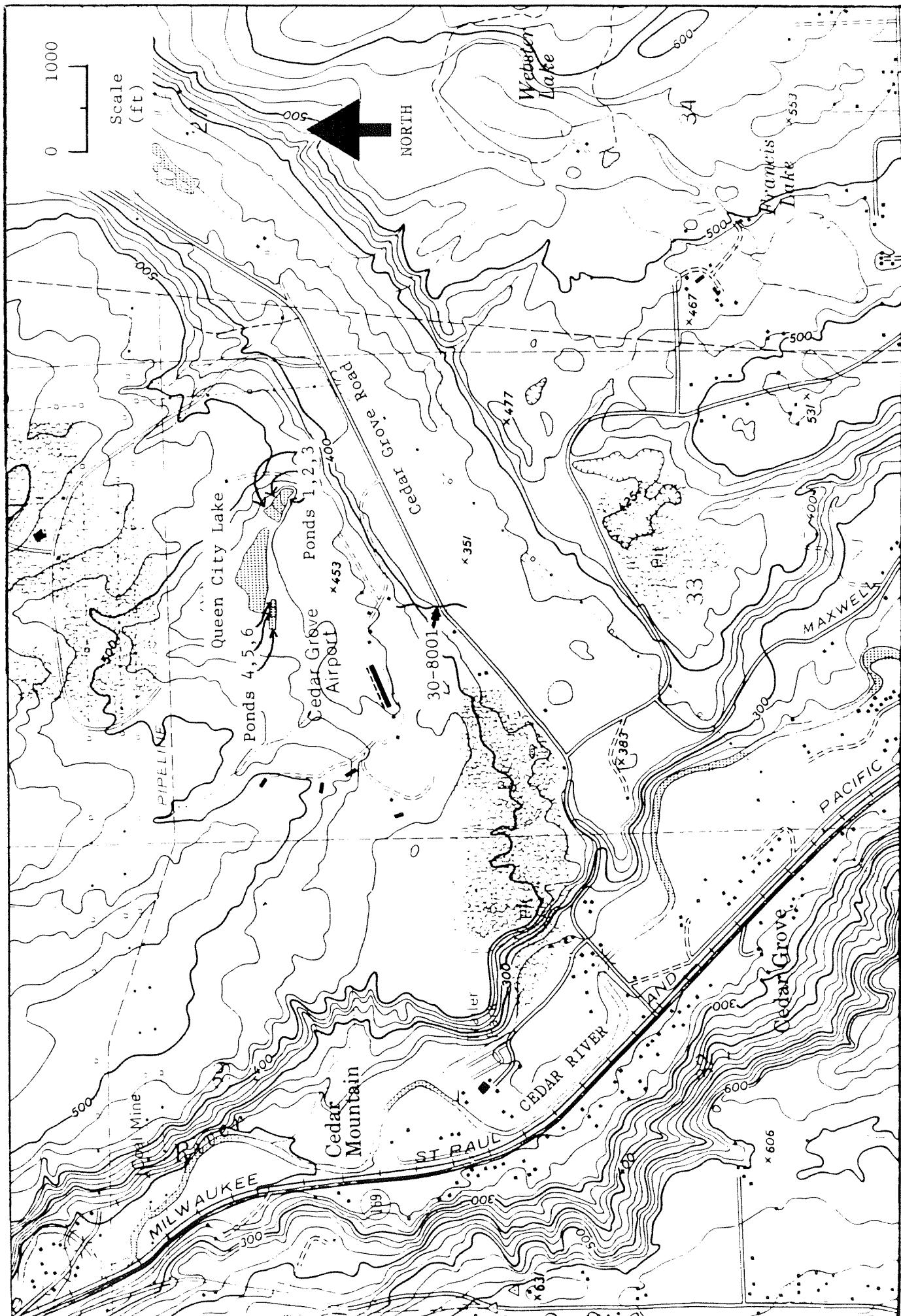


Figure 1: Queen City Farms site map.

February 5, 1988

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The unnamed stream was sampled on July 21, 1987, at the apparent upstream (north) boundary of the parcel at 17115 Cedar Grove Road. Gale Colburn of the NWRO and Dale Norton and Bill Yake of WQIS were involved in the sampling. The results are summarized in Tables 1A through 1E. Additional data including results of field blank analyses, detection limits, and details of the bioassay, are included in the appendices.

Two observations made during the sampling bear noting:

1. Approximately a dozen fingerlings were seen in a small pool about five yards downstream from the sampling point. Several individuals were captured and identified as cutthroat trout. They appeared, based on superficial examination, to be healthy.
2. The stream flow was very low, and after being routed under Cedar Grove Road, the stream disappeared--apparently seeping into the ground.

The analytical results are generally unremarkable. The presence of cutthroat trout fry and the 100 percent survival rate of Daphnia imply that the water was not significantly toxic at the time of sampling and for some time prior to sampling. The cation/anion results may be useful in establishing groundwater/surface water links. This water can be characterized as containing primarily calcium bicarbonate, with secondary concentrations of sodium and sulfate. Subsequent analysis of surface waters and groundwaters upstream of the unnamed creek may find cation/anion concentrations a useful tool.

The only priority pollutant organics detected were in the volatile fraction. 4-methyl-2-pentanone (aka: methyl isobutyl ketone, hexone, isobutyl methyl ketone) was detected at 10 ug/L. NIOSH (1983) reports an aquatic toxicity rating (TLm96) of over 1000 mg/L. Hawley (1977) states that it is used as a "solvent for paints, varnishes, nitro-cellulose lacquers, manufacture of methyl amyl alcohol, extraction processes. . . , organic synthesis; and denaturant for alcohol."

A trace (0.1 ug/L, est.) of styrene was also detected. NIOSH (1983) reports an aquatic toxicity rating (TLm96) of 10 to 100 mg/L. It is used in polystyrene plastics and resins (Hawley, 1977).

These two compounds should be included in organic scans of groundwater and surface water in the area to determine if they may provide clues to the source of the unnamed creek and possible contaminant migration.

Results for other water quality indicators imply that at the time of sampling, the water quality in the creek was apparently typical of streams in Western Washington.

Table 1. Results of stream sampling (7/21/87; 1100 hours).

Table 1A - Conventionals/Flow

Flow (cfs)	0.018*	Bicarbonate Alkalinity (mg as CaCO ₃ /L)	32
Temperature (°C)	14.9*	Carbonate Alkalinity (mg as CaCO ₃ /L)	0.1
pH (S.U.)	6.8*	Total Hardness (mg as CaCO ₃ /L)	4.6
Conductivity (umhos/cm)	95*	NH ₄ ⁻ -N (mg/L)	<0.01
	90	NO ₂ ⁻ +NO ₃ ⁻ -N (mg/L)	0.1
Dissolved Oxygen (mg/L)	8.9*	T-Po ₄ ⁻³ -P (mg/L)	0.01
Total Susp. Solids (mg/L)	1	Turbidity (NTUs)	8

Table 1B - Cations/Anions

Cations	Anions
Ca (mg/L) 11.5	HCO ₃ ⁻ (mg/L) 19.5
Na (mg/L) 4.11	SO ₄ ²⁻ (mg/L) 9.0
Mg (mg/L) 2.2	Cl ⁻ (mg/L) 2.8
K (mg/L) 1.6	CO ₃ ²⁻ (mg/L) 0.06

Table 1C - Metals

Arsenic (ug/L) <1	Mercury (ug/L) <0.05
Cadmium (ug/L) <0.2	Manganese (ug/L) 14
Chromium (ug/L) <5	Lead (ug/L) <1
Copper (ug/L) <5	Nickel (ug/L) <5
Iron (ug/L) 435	Zinc (ug/L) <5

Table 1D - Detected Organics

Acetone (ug/L)	+
Methylene Chloride (ug/L)	+
Styrene (ug/L)	0.1J
Toluene (ug/L)	+
4-Methyl-2-Pentanone (ug/L)	10

Table 1E - Bioassay/Daphnia pulex

Results: 100 percent survival

* = Field measurement

+ = Detected in blank at similar or higher concentration

J = Estimated concentration

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Additional upstream sampling will be required if groundwater/surface water linkages in the Queen City Farms/Stoneway Gravel area are to be understood. Use of cation/anion analyses and volatile organic analyses may be most helpful in establishing these relationships.

The diversion of surface water from springs on the Stoneway Gravel property may pose a problem, as summer low flows in the unnamed creek are inadequate to maintain the stream. Salmonids apparently spawn in the stream although it is doubtful that the fry survive through summers as dry as 1987.

BY:cp
Attachments

cc: Gary Brugger
Carol Fleskes
Phyllis Baas
Michael Ruef
Dale Norton

REFERENCES

- Brugger, G., 1987. Letter to Bill Yake, "Contaminated Stream at 17115 Cedar Grove Road, Issaquah, Washington," dated June 17, 1987, 2 pp.
- Hart Crowser & Associates, Inc., 1983. Assessment of Hydrogeology and Ground Water Quality; Surficial Aquifer; Queen City Farms; King Co., Wa. 12 pp + Appendices
- Hawley, G.G., 1977. The Condensed Chemical Dictionary. Van Nostrand Reinhold Co. 957 pp.
- NIOSH, 1983. Registry of Toxic Effects of Chemical Substances. V.3, 988 pp.
- Ruef, M., 1987. Memorandum to Phyllis Baas, "Field Reconnaissance in the Stoneway Gravel Pit and the Area South of Queen City Lake," dated July 9, 1987, 3 pp.

APPENDIX



ANDREA BEATTY RINKER
Director

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

Post Office Box 346 • Manchester, Washington 98353-0346 • (206) 895-4740

M E M O R A N D U M

August 6, 1987

To: Bill Yake
WMO
From: Margaret Stinson
Re: Queen City Farms - Sample #30-8001
Daphnid Bioassay

Introduction

A bioassay was conducted on one sample from a stream that flows through Queen City Farms. Queen City Farms, formerly a chemical disposal site, has been the object of an extensive cleanup effort. Despite those efforts, there is concern that toxic compounds may still be present, causing contamination within the stream. The purpose of the test was to assess the stream water's toxicity to aquatic life. Acute toxicity to *Daphnia pulex* was measured.

Methods

The sample was collected July 21, 1987, as a grab, and was held on ice until delivery at Manchester Environmental Laboratory the following day. The test was initiated July 22, 1987.

The test was conducted by the method described in the U.S. EPA (1985) "Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms." Two hundred milliliters of test solution was placed in each of five two hundred fifty milliliter beakers. Five daphnids (less than 24 hours old) were randomly distributed to four of the five beakers. Food was added to each replicate and the beakers were placed in a 20 degree C incubator. The fifth beaker was used as a "dummy" for measurement of dissolved oxygen, pH, conductivity, hardness, and alkalinity at the beginning of the test.

Test organisms were challenged with 100% concentration of the effluent. Dechlorinated Manchester city water, adjusted to 80-90 mg/L CaCO₃ hardness and aerated, was used as a control.

After forty eight hours, the daphnids in each replicate were counted and percent survival was recorded. All chemical analyses performed at 0 hour were also conducted at 48 hours.

Results

Both the Queen City sample and the control supported 100% of the organisms after 48 hours exposure. Test results are tabulated in Table I.

Table 1. Results of bioassay for Queen City Farms using Daphnia pullex.

Sample	Percent Survival	pH		Dissolved Oxygen (mg/L)		Alkalinity (mg/L CaCO ₃)		Hardness (mg/L CaCO ₃)		Conductivity (µmhos/cm)	
		0 hr	48 hr	0 hr	48 hr	0 hr	48 hr	0 hr	48 hr	0 hr	48 hr
30-B001	100	7.4	7.5	9.4	8.1	31	34	30	34	91	96
Control	100	7.9	7.8	8.6	8.1	60	59	62	82	303	297

Bivariate : DOE = 500

Sample No: 8730800

sample No: 8730800

SOURCE: Amb

Source: Ambient stream/River

Depth: OA Code:

Description: 1 Laboratory: WE

Description: 1 operator: WE

Gen Inorg/Phys-Speci	Water-Totals	Water-Totals	VOA - PP Scan (GCMS)	Water-Totals	Water-Totals	B/N/Acid Scan	Water-Totals
Parameter	Result	Units	Parameter	Result	Units	Parameter	Result
Cond@25C Meter	90	umho/cm	Carbon Tetrachloride	5U	ug/l	Benzo(a)pyrene	5U ug/l
PH LAB Meter	7.4	Std Units	Acetone	0.7UJ	ug/l	2,4-Dinitrophenol	25U ug/l
Alk-Tot Caco3	3.2	mg/l	Chloroform	5U	ug/l	Dibenzo(a,h)anthracene	5U ug/l
Alk-HCO3 Caco3	3.2	mg/l	Benzene	5U	ug/l	Benzo(a)anthracene	5U ug/l
Alk-CO3 Caco3	0.1	mg/l	1,1,1-Trichloroethane	5U	ug/l	4-Chloro-3-Methylphenol	5U ug/l
Hard-Tot Caco3	4.6	mg/l	Bromomethane	10U	ug/l	Benzoic acid	25U ug/l
Turbidity Meter	8	NTU	Chloromethane	10U	ug/l	Hexachloroethane	5U ug/l
			Chloroethane	10U	ug/l	Hexachlorocyclopentadiene	5U ug/l
			Vinyl Chloride	10U	ug/l	Isophorone	5U ug/l
			Methylene Chloride	3UJ	ug/l	Acenaphthene	5U ug/l
Solids - Specified	1	mg/l	Carbon Disulfide	5U	ug/l	Diethylphthalate	5U ug/l
Parameter			Bromoform	5U	ug/l	Di-n-Butylphthalate	5U ug/l
Solids T-Suspen			Bromodichloromethane	5U	ug/l	Phenanthrene	5U ug/l
			1,1-Dichloroethane	5U	ug/l	Butylbenzylphthalate	5U ug/l
Nutrients - Specific		Water-Totals	1,1,1-Dichloroethene	5U	ug/l	N-Nitrosodiphenylamine	5U ug/l
Parameter		Result	Trichlorofluoromethane	5U	ug/l	Fluorene	5U ug/l
			1,2-Dichloropropane	10U	ug/l	Hexachlorobutadiene	5U ug/l
NH3-N Total	.01K	mg/l	2-Butanone	5U	ug/l	Pentachlorophenol	25U ug/l
NO2NO3-N Total	.10	mg/l	1,1,2-Trichloroethane	5U	ug/l	2,4,6-Trichlorophenol	5U ug/l
Phos Total	.01	mg/l	Trichloroethene	5U	ug/l	2-Nitroaniline	25U ug/l
			1,1,2,2-Tetrachloroethane	10U	ug/l	2-Nitrophenol	5U ug/l
			Total Xylenes	5U	ug/l	Naphthalene	5U ug/l
			Ethylbenzene	5U	ug/l	2-Methylnaphthalene	5U ug/l
Metals - Specified		Water-Totals	Styrene	0.1J	ug/l	2-Chloronaphthalene	5U ug/l
Parameter		Result	2-Dichloroethane	5U	ug/l	3,3'-Dichlorobenzidine	10U ug/l
			Vinyl Acetate	10U	ug/l	2-Methylphenol	5U ug/l
Calcium Ca-Total	11.5	mg/l	4-Methyl-2-Pentanone	10	ug/l	1,2-Dichlorobenzene	5U ug/l
Mg-Total	2.2	mg/l	Toluene	0.1UJ	ug/l	o-Chlorophenol	5U ug/l
Sodium Na-Total	4.11	mg/l	Chlorobenzene	5U	ug/l	2,4,5-Trichlorophenol	25U ug/l
Potassium K -Total	1.6	mg/l	Dibromochloromethane	5U	ug/l	Nitrobenzene	5U ug/l
			Tetrachloroethene	5U	ug/l	3-Nitroaniline	25U ug/l
			Cis-1,2-Dichloroethene	5U	ug/l	4-Nitroaniline	25U ug/l
			trans-1,2-Dichloroethene	5U	ug/l	4-Nitrophenol	25U ug/l
			2-Hexanone	10U	ug/l	Benzyl Alcohol	5U ug/l
			cis-1,3-Dichloropropene	5U	ug/l	4-Bromophenyl-phenyleth	5U ug/l
Nickel Tot-Rec	5U	ug/l	trans-1,3-Dichloropropene	5U	ug/l	2,4-Dimethylphenol	5U ug/l
Zinc Tot-Rec	5U	ug/l	Spike D4-1,2-Dichloroet	149 % Recov		4-Methylphenol	5U ug/l
Cadmium Tot-Rec	0.2U	ug/l	Spike 1,4-Bromofluorobor	104 % Recov		1,4-Dichlorobenzene	5U ug/l
Lead Tot-Rec	1U	ug/l	spike D8-Toluene	100 % Recov		4-Chloroaniline	5U ug/l
Chromium Tot-Rec	5U	ug/l				Phenol	5U ug/l
Copper Tot-Rec	5U	ug/l				bis(2-Chloroethyl) Ether	5U ug/l
Manganese Tot-Rec	14	ug/l				bis(2-Chloroethoxy)Meth	5U ug/l
Mercury Tot-Rec	0.05U	ug/l				bis(2-Ethyhexyl)Phthal	5U ug/l
Arsenic Tot-Rec	1U	ug/l				Di-n-Octyl Phthalate	5U ug/l
Iron Tot-Rec	435	ug/l				Hexachlorobenzene	5U ug/l

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Project: DOE-590A

QUEEN CITY FARMS, MAPLE VALLEY

Officer: WEY Account: 422

Sample No: 87 308001 Begin Sample Date: 87/07/21

Source: Ambient Stream/River

QA Code:

Laboratory: WE

Description: 1

Parameter	B/N/Acid Scan		Water-Totals		Pest/PCB - PP Scan		Water-Totals	
	Result	Units	Result	Units	Result	Units	Result	Units
Anthracene	.50	ug/1	Heptachlor epoxide	.001U ug/1				
1,2,4-Trichlorobenzene	.50	ug/1	Endosulfan sulfate	.001U ug/1				
2,4-Dichlorophenol	.50	ug/1	Endrin aldehyde	.001U ug/1				
2,4-Dinitrotoluene	.50	ug/1	Toxaphene	.060U ug/1				
Pyrene	.50	ug/1	PCB - 1260	.020U ug/1				
Dimethylphthalate	.50	ug/1	PCB - 1254	.020U ug/1				
Dibenzofuran	.50	ug/1	PCB - 1221	.020U ug/1				
Benzo(ghi)perylene	.50	ug/1	PCB - 1232	.020U ug/1				
Indeno(1,2,3-cd)Pyrene	.50	ug/1	PCB - 1248	.020U ug/1				
Benzo(b)fluoranthene	.50	ug/1	PCB - 1016	.020U ug/1				
Fluoranthene	.50	ug/1	beta-Endosulfan	.001U ug/1				
Benzo(k)fluoranthene	.50	ug/1	PCB - 1242	.020U ug/1				
Acenaphthylene	.50	ug/1	Spike o,p'-DDE	89% Recov				
Chrysene	.50	ug/1						
4,6-Dinitro-2-methylphe	2.50	ug/1						
1,3-Dichlorobenzene	.50	ug/1						
2,6-Dinitrotoluene	.50	ug/1						
N-Nitroso-di-n-Propylam	.50	ug/1						
SPIKE D5-Phenol	55%	ug/1						
SPIKE D10-Pyrene	94%	ug/1						
SPIKE 2-Fluoropheno1	69%	ug/1						
SPIKE D5-Nitrobenzene	90%	ug/1						
SPIKE 2-Fluorobiphenyl	101%	ug/1						
SPIKE D14-Terphenyl	159%	ug/1						
4-Chlorophenyl-phenylet	5.00	ug/1						
bis(2-Chloroisopropyl)E	.50	ug/1						
Parameter	Pest/PCB - PP Scan		Water-Totals		Pest/PCB - PP Scan		Water-Totals	
	Result	Units	Result	Units	Result	Units	Result	Units
4,4'-DDT								
Chlordane								
gamma-BHC (Lindane)								
Dieldrin								
Endrin								
4,4'-DDD								
4,4'-DDE								
Heptachlor								
Aldrin								
alpha-BHC								
beta-BHC								
delta-BHC								
alpha-Endosulfan								

(Sample Complete)

23-OV-87
15:04:24

EPA Region X Lab Management System
Sample/Project Analysis Results

Project: DOE-590A

Sample No: 87 308003

Begin Sample Date: 87/07/21

Laboratory: WE

Description: Bl

Parameter	Pest/PCB - PP Scan	Water-Total	Result Units
4,4'-DDT		.0010	ug/l
Chlordane		.0010	ug/l
Gamma-BHC (Lindane)		.0010	ug/l
Dieldrin		.0010	ug/l
Endrin		.0010	ug/l
4,4'-DDD		.0010	ug/l
4,4'-DDE		.0010	ug/l
Heptachlor		.0010	ug/l
Aldrin		.0010	ug/l
alpha-BHC		.0010	ug/l
beta-BHC		.0010	ug/l
delta-BHC		.0010	ug/l
alpha-Endosulfan		.0010	ug/l
Heptachlor epoxide		.0010	ug/l
Endosulfan sulfate		.0010	ug/l
Endrin aldehyde		.0010	ug/l
Toxaphene		.0600	ug/l
PCB - 1260		.0200	ug/l
PCB - 1254		.0200	ug/l
PCB - 1221		.0200	ug/l
PCB - 1232		.0200	ug/l
PCB - 1248		.0200	ug/l
PCB - 1016		.0200	ug/l
beta-Endosulfan		.0010	ug/l
PCB - 1242		.0200	ug/l
Spike o,p'-DDE		84 % Recov	

Officer: WEY Account: 422
Depth: QA Code:

(Sample Complete)

Project: DOE-590A

QUEEN CITY FARMS, MAPLE VALLEY

Officer: WEY Account: 422

Sample No: 87 308004 Begin Sample Date: 87/07/21

Source: Ambient Stream/River

Depth: QA Code:

Laboratory: WE Description: B2

Parameter	VOA - PP Scan (GCMS)		Water-Total		Water-Totals		B/N/Acid Scan		B/N/Acid Scan		Water-Totals	
	Result	Units	Result	Units	Result	Units	Parameter	Result	Parameter	Result	Parameter	Result
Carbon Tetrachloride	5U	ug/l	Benzo(a)Pyrene	3U	ug/l	Anthracene	3U	ug/l				
Acetone	3UJ	ug/l	2,4-Dinitrophenol	16U	ug/l	1,2,4-Trichlorobenzene	3U	ug/l				
Chloroform	5U	ug/l	Dibenzo(a,h)anthracene	3U	ug/l	2,4-Dichlorophenol	3U	ug/l				
Benzene	5U	ug/l	Benzo(a)anthracene	3U	ug/l	2,4-Dinitrotoluene	3U	ug/l				
1,1,1-Trichloroethane	5U	ug/l	4-Chloro-3-Methylphenol	3U	ug/l	Pyrene	3U	ug/l				
Bromomethane	10U	ug/l	Benzoic acid	16U	ug/l	Dimethylphthalate	3U	ug/l				
Chloromethane	10U	ug/l	Hexachloroethane	3U	ug/l	Dibenzofuran	3U	ug/l				
Chloroethane	10U	ug/l	Hexachlorocyclopentadiene	3U	ug/l	Benzol(ghi)perylene	3U	ug/l				
Vinyl Chloride	10U	ug/l	Isophorone	3U	ug/l	Indeno(1,2,3-cd)pyrene	3U	ug/l				
Methylene Chloride	4UJ	ug/l	Acenaphthene	3U	ug/l	Benzol(b)fluoranthene	3U	ug/l				
Carbon Disulfide	5U	ug/l	Diethylphthalate	3U	ug/l	Fluoranthene	3U	ug/l				
Bromoform	5U	ug/l	Di-n-Butylphthalate	3U	ug/l	Benzol(k)fluoranthene	3U	ug/l				
Bromodichloromethane	5U	ug/l	Phenanthrene	3U	ug/l	Acenaphthylene	3U	ug/l				
1,1-Dichloroethane	5U	ug/l	Butylbenzylphthalate	3U	ug/l	Chrysene	3U	ug/l				
1,1-Dichloroethene	5U	ug/l	N-Nitrosodiphenylamine	3U	ug/l	4,6-Dinitro-2-methylpheno	16U	ug/l				
Trichlorofluoromethane	5U	ug/l	Fluorene	3U	ug/l	1,3-Dichlorobenzene	3U	ug/l				
1,2-Dichloropropane	5U	ug/l	Hexachlorobutadiene	3U	ug/l	2,6-Dinitrotoluene	3U	ug/l				
2-Butanone	6UJ	ug/l	Pentachlorophenol	16U	ug/l	N-Nitroso-di-n-Propylam	3U	ug/l				
1,1,2-Trichloroethane	5U	ug/l	2,4,6-Trichlorophenol	3U	ug/l	Spike D5-Phenol	29%	ug/l				
Trichloroethene	5U	ug/l	2-Nitroaniline	16U	ug/l	Spike D10-Pyrene	77%	ug/l				
1,1,1,2,2-Tetrachloroetha	10U	ug/l	2-Nitrophenol	3U	ug/l	Spike 2-Fluorophenol	43%	ug/l				
Total Xylenes	5U	ug/l	Naphthalene	3U	ug/l	Spike D5-Nitrobenzene	95%	ug/l				
Ethylbenzene	5U	ug/l	2-Methylnaphthalene	3U	ug/l	Spike 2-Fluorobiphenyl	97%	ug/l				
Styrene	5U	ug/l	2-Chloronaphthalene	3U	ug/l	Spike D14-Terphenyl	360%	ug/l				
1,2-Dichloroethane	5U	ug/l	3,3'-Dichlorobenzidine	6U	ug/l	4-Chlorophenyl-phenylet	3U	ug/l				
Vinyl Acetate	10U	ug/l	2-Methylphenol	3U	ug/l	bis(2-Chloroisopropyl)E	3U	ug/l				
4-Methyl-2-Pantanone	1UJ	ug/l	1,2-Dichlorobenzene	3U	ug/l							
Toluene	0.1UJ	ug/l	o-Chlorophenol	16U	ug/l	Pest/PCB - PP Scan	0.01U	ug/l				
Chlorobenzene	5U	ug/l	2,4,5-Trichlorophenol	16U	ug/l	Parameter	0.01U	ug/l				
Dibromoethane	5U	ug/l	Nitrobenzene	3U	ug/l	Water-Totals	0.01U	ug/l				
Tetrachloroethene	5U	ug/l	3-Nitroaniline	16U	ug/l	Result Units	0.01U	ug/l				
Cis-1,2-Dichloroethene	5U	ug/l	4-Nitroaniline	16U	ug/l							
trans-1,2-Dichloroethene	5U	ug/l	4-Nitropheno	16U	ug/l	4,4'-DDT	.001U	ug/l				
2-Hexanone	1UJ	ug/l	Benzyl Alcohol	3U	ug/l	Chlordane	.001U	ug/l				
cis-1,3-Dichloropropene	5U	ug/l	4-Bromophenyl-phenyleth	3U	ug/l	gamma-BHC (Lindane)	.001U	ug/l				
trans-1,3-Dichloropropene	5U	ug/l	2,4-Dimethylphenol	3U	ug/l	Dieldrin	.001U	ug/l				
Spike D4-1,2-Dichloroethene	13.8 % Recov		4-Methylphenol	3U	ug/l	Endrin	.001U	ug/l				
Spike 1,4-Bromofluorob	10.0 % Recov		1,4-Dichlorobenzene	3U	ug/l	4,4'-DDD	.001U	ug/l				
Spike D8-Toluene	10.4 % Recov		4-Chloroaniline	3U	ug/l	4,4'-DDE	.001U	ug/l				
			Phenol	3U	ug/l	Heptachlor	.001U	ug/l				
			bis(2-Chloroethyl)Ether	3U	ug/l	Aldrin	.001U	ug/l				
			bis(2-Chloroethoxy)Meth	3U	ug/l	alpha-BHC	.001U	ug/l				
			bis(2-Ethylhexyl)Phthal	3U	ug/l	beta-BHC	.001U	ug/l				
			Di-n-Octyl Phthalate	3U	ug/l	delta-BHC	.001U	ug/l				
			Hexachlorobenzene	3U	ug/l	alpha-Endosulfan	.001U	ug/l				

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23-NOV-87
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EPA Region X Lab Management System
Sample/Project Analysis Results

Project: DOE-590A

Sample No: 37 308004

Laboratory: WE

Begin Sample Date: 87/07/21

Officer: WEY Account: 422

Depth:

QA Code:

Description: B2

Parameter	Pest/PCB - PP Scan	Water-Total
	*** Continued ***	Result Units
Heptachlor epoxide	.001U	ug/1
Endosulfan sulfate	.001U	ug/1
Endrin aldehyde	.001U	ug/1
Toxaphene	.060U	ug/1
PCB - 1260	.020U	ug/1
PCB - 1254	.020U	ug/1
PCB - 1221	.020U	ug/1
PCB - 1232	.020U	ug/1
PCB - 1248	.020U	ug/1
PCB - 1016	.020U	ug/1
beta-Endosulfan	.001U	ug/1
PCB - 1242	.020U	ug/1
Spike o,p'-DDE	76%	% Recov

(Sample Complete)